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Invention: NEURAL NETWORKS FOR  
INGRESS MONITORING

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**APPEAL BRIEF**

Mail Stop Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This appeal brief is submitted in triplicate in furtherance of the notice of appeal submitted September 18, 2006 and in response to the Official Action dated June 16, 2006. The \$250.00 fee for filing this appeal brief was submitted with the appeal brief submitted September 28, 2005. Should any additional fees be required to constitute this a timely appeal brief, the Commissioner is hereby authorized to charge any such fees, or credit any overpayment, to Deposit Account No. 10-0435, with reference to Appellant's undersigned counsel's file 6573-62441. A duplicate copy of this authorization is enclosed for that purpose.

### **Real Party In Interest**

The real party in interest is Trilithic, Inc., by virtue of assignments recorded July 20, 1999 in the records of the Patent and Trademark Office on patent record reel 010117, beginning at frame 0458 and July 18, 2000 in the records of the Patent and Trademark Office on patent record reel 011127, beginning at frame 0826.

### **Related Appeals and Interferences**

There are no related appeals or interferences.

### **Status of Claims**

Claims 1-40, all of the claims remaining in this application, are rejected. The rejections of all of claims 1-40 are appealed. Claims 41-124 have been cancelled without prejudice.

### **Status of Amendments**

No amendments were filed subsequent to the rejection from which this appeal is taken.

### **Summary of Claimed Subject Matter**

The invention may best be understood by referring to the following copies of appealed claims 1-40, annotated with parenthetical reference numbers and related notes from the detailed description.

With reference to claim 1, the invention is a method of identifying a source of ingress into a network (cable return path) including storing (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB\_50.SST, AM\_50.SST, CP\_50.SST, and NOISE\_50.SST) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), comparing (page 13, line 10--page 14, line 6) the frequency spectrum of ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), and determining (page 13, line 10--page 14, line 6) from the comparison which of the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress.

With reference to claim 2, the invention is the method of claim 1 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path

distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which of the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress together include finding (page 12, line 22--page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 3, the invention is the method of claim 2 wherein finding (page 12, line 22--page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress (CB signal, AM radio, common path distortion) to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 4, the invention is the method of claim 3 wherein finding (page 12, line 22--page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 5, the invention is the method of claim 4 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 6, the invention is the method of claim 1 further including digitizing (page 11, lines 2-10) the frequency spectrum of the ingress.

With reference to claim 7, the invention is the method of claim 6 wherein comparing (page 13, line 10--page 14, line 6) the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line

6) from the comparison which frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 8, the invention is the method of claim 7 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 9, the invention is the method of claim 8 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 10, the invention is the method of claim 9 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 11, the invention is the method of claim 6 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path

distortion) includes digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 12, the invention is the method of claim 11 wherein comparing (page 13, line 10--page 14, line 6) the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which of the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress together include finding (page 12, line 22--page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 13, the invention is the method of claim 12 wherein finding (page 12, line 22--page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 14, the invention is the method of claim 13 wherein finding (page 12, line 22--page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 15, the invention is the method of claim 14 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10)

frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 16, the invention is the method of claim 1 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 17, the invention is the method of claim 16 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which thus-digitized (page 11, lines 2-10) frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress together include finding (page 12, line 22--page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 18, the invention is the method of claim 17 wherein finding (page 12, line 22--page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 19, the invention is the method of claim 18 wherein finding (page 12, line 22--page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-

digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 20, the invention is the method of claim 19 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 21, the invention is an apparatus (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for identifying a source of ingress into a network (cable return path) including memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB\_50.SST, AM\_50.SST, CP\_50.SST, and NOISE\_50.SST) for storing frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress.

With reference to claim 22, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 23, the invention is the apparatus of claim 22 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 24, the invention is the apparatus of claim 23 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel®



spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 25, the invention is the apparatus of claim 24 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) further includes a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together including a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 26, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing (page 11, lines 2-10) the frequency spectrum of the ingress.

With reference to claim 27, the invention is the apparatus of claim 26 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-

based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 28, the invention is the apparatus of claim 27 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 29, the invention is the apparatus of claim 28 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to

the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 30, the invention is the apparatus of claim 29 wherein the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 31, the invention is the apparatus of claim 26 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and the memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB\_50.SST, AM\_50.SST, CP\_50.SST, and NOISE\_50.SST) includes a memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB\_50.SST, AM\_50.SST, CP\_50.SST, and NOISE\_50.SST) for storing the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 32, the invention is the apparatus of claim 31 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL

INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 33, the invention is the apparatus of claim 32 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 34, the invention is the apparatus of claim 33 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) further includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 35, the invention is the apparatus of claim 34 wherein the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum

solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 36, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and the memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB\_50.SST, AM\_50.SST, CP\_50.SST, and NOISE\_50.SST) includes a memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB\_50.SST, AM\_50.SST, CP\_50.SST, and NOISE\_50.SST) for storing the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 37, the invention is the apparatus of claim 36 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the stored frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 38, the invention is the apparatus of claim 37 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 39, the invention is the apparatus of claim 38 further including a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 40, the invention is the apparatus of claim 39 wherein the neural network (Fig. 6) and the back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

### **Grounds of Rejection to be Reviewed on Appeal**

The grounds of rejection to be reviewed by the Board are:

(1) whether claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 would have been obvious under 35 U.S.C. § 103 based upon Nickolls U. S. Patent 5,251,626 (hereinafter Nickolls);

(2) whether claims 5, 10, 15, 20, 25, 30, 35 and 40 would have been obvious under 35 U.S.C. § 103 based upon the combination of Nickolls and Eberhart U. S. Patent

6,516,309 (hereinafter Eberhart); and,

(3) whether claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 would have been anticipated under 35 U.S.C. § 102 based upon Nickolls

### **Argument**

#### **I. Nickolls is non-analogous to the present invention.**

The Examiner rejected claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 under 35 U. S. C. § 103. The Examiner relied upon Nickolls to support this rejection. The Examiner takes the position that Nickolls's "method and apparatus for identifying internally generated ECG noise is applicable for identifying 'ingress noise', which is to say externally generated noise in communication networks." The June 16, 2006 rejection, page 3, lines 3-5.

Nickolls relates to medical devices which monitor the cardiac state of a patient by sensing the patient's intrinsic rhythm for the presence of arrhythmias and which deliver therapy in the form of electrical energy to cardiac tissue in an attempt to revert ventricular fibrillation (VF) and other detected arrhythmias and restore a normal sinus rhythm to the patient. Nickolls, col. 1, lines 11-17. More particularly, Nickolls describes an apparatus and method for the detection and treatment of cardiac arrhythmias by the use of a neural network. Nickolls utilizes a neural network for arrhythmia recognition, diagnosis, and therapy control or a warning system to a patient. Nickolls's neural network is a parallel processing system, and is said to have the capability of recognizing VF's and other forms of arrhythmias in real time accurately and with low power consumption. Nickolls's device is said to provide an enhanced complex therapy control and the ability to make diagnostic decisions using incomplete data. Nickolls's device is said to be applicable to all types of heart pacemaker sensing and therapy including bradycardia and rate responsive pacing. Nickolls, col. 1, lines 19-34. The physiological signals in Nickolls are those representative of heart activity in a patient. Nickolls, abstract. The source of the signals in Nickolls is the heart which the neural network in Nickolls is to diagnose and treat. The source of the signals in Nickolls is thus known.

The present invention provides a method and apparatus for monitoring and identifying the sources of ingress noise into a network. Ingress noise into a network can be from multiple different and unknown origins, external to the network. These sources include, but are by no means limited to, amateur radio, citizens' band radio, machinery noise, home appliance noise, home computer clock signals, AM radio, and other electrical sources.

First, with regard to the Examiner's characterization of Nickolls, the Examiner uses the term "noise" to refer to Nickolls's ECG. That is, of course, a mischaracterization of Nickolls's signals. Nickolls's signals are ECG signals, albeit abnormal ones. That is exactly the reason why Nickolls wants to analyze them, to help in diagnosing the abnormality.

The Examiner argues that "[b]ecause the two problems [the problem, a solution to which Nickolls proposes and the problem, a solution to which Appellant proposes] are mathematically analogous, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply the teachings of Nickolls to the identification of ingress noise." The June 16, 2006 rejection, page 3, lines 5-7. The Examiner argues that the present invention and Nickolls "differ only in whether or not the subject noise is generated externally (the instant invention) or internally (the reference invention)." The June 16, 2006 rejection, page 3, lines 24-25.

Nickolls is not trying to identify a noise source. The information received by Nickolls's device is not noise, but electrical signals being generated in a human heart. Nickolls examines the heart-generated signals, and compares those signals to known heart distress signals to identify which kind of distress the heart being monitored is experiencing. Nickolls does this in order to apply the appropriate electrical signal to the distressed heart in an effort to reestablish normal heart electrical signals. Misidentifying the distress signal leads to applying the wrong kind of electrical signal, with potentially fatal consequences.

The present invention relates to the identification of the ingress noise from external and unknown sources into networks.

**Determining the nature of cardiac distress by analyzing signals generated in the distressed heart is non-analogous to determining a source of ingress noise entering into a network.**

The Examiner concedes that the cases cited by Appellant accurately reflect the current state of the law on the issue of non-analogous art. However, the Examiner then proceeds to pay only lip service to the holdings of these cases. The Examiner cites In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992), In re Deminski, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986), In re Clay, 966 F.2d 656, 23 USPQ2d 1058, Wang Laboratories Inc. v. Toshiba Corp., 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993) and State Contracting & Eng'g Corp. v. Condotte America, Inc., 346 F.3d 1057, 68 USPQ2d 1481 (Fed. Cir. 2003). Only in Deminski did the court find that the prior art was analogous, and in



that case, after noting that

[t]he determination that a reference is from a nonanalogous art is therefore two-fold. First, we decide if the reference is within the field of the inventor's endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved.

The court noted

*Here, the references satisfy the first inquiry because they are "within the field of the inventor's endeavor" of horizontally reciprocating, double-acting piston devices for moving fluids. We agree with the board that the cited pumps and compressors have essentially the same function and structure: they move fluids by means of a double-acting piston, a cylinder, and valves. 3. Consequently, the field of endeavor is the same for an inventor of either a pump or a compressor of the double-acting piston type. 4. Thus, the Pocock "pump" was correctly considered as prior art for the Deminski "compressor." It is even more clear that the British and Kovach references are within Deminski's field of endeavor because they are directed to compressors having horizontally reciprocating, double-acting pistons.*

Deminski at 315, italics Appellant's. Thus, in Deminski, the court specifically found that the art was from the same field of endeavor. That is quite clearly not the case here.

In Clay, for example, the Court observed that

Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved (citing In re Deminski, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986); In re Wood, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979)). Clay at 1060.

In Clay, the issue was whether a reference (Sydansk) which disclosed a process using a gel for reducing the permeability of hydrocarbon-bearing formations (useful in the recovery of oil from an oil field, for example) was analogous art to Clay's claimed process for using a similar gel to fill a dead volume in the bottom of a liquid hydrocarbon storage tank. Clay, supra. The Court observed that

Sydansk cannot be considered to be within Clay's field of endeavor merely because both relate to the petroleum industry. Sydansk teaches the use of a gel in unconfined and irregular volumes within generally underground natural oil-bearing formations to channel flow in a desired direction; Clay teaches the introduction of gel to the confined dead volume of a man-

made storage tank. The Sydansk process operates in extreme conditions, with petroleum formation temperatures as high as 115°C and at significant well bore pressures; Clay's process apparently operates at ambient temperature and atmospheric pressure. Clay's field of endeavor is the storage of refined liquid hydrocarbons. The field of endeavor of Sydansk's invention, on the other hand, is the extraction of crude petroleum. The Board clearly erred in considering Sydansk to be within the same field of endeavor as Clay's. Clay, supra., emphasis the Court's.

The Court noted that

Even though the art disclosed in Sydansk is not within Clay's field of endeavor, the reference may still properly be combined with Hetherington [another reference] if it is reasonably pertinent to the problem Clay attempts to solve. In re Wood, 599 F.2d at 1036, 202 USPQ at 174. A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Clay at 1060-61.

The Court analyzed Sydansk's pertinence to the problem Clay was trying to solve, observing that

Sydansk's gel treatment of underground formations functions to fill anomalies so as to improve flow profiles and sweep efficiencies of injection and production fluids through a formation, while Clay's gel functions to displace liquid product from the dead volume of a storage tank. Clay at 1061, footnote omitted,

and concluded that

A person having ordinary skill in the art would not reasonably have expected to solve the problem of dead volume in tanks for storing refined petroleum by considering a reference dealing with plugging underground formation anomalies. The Board's finding to the contrary is clearly erroneous. Since Sydansk is non-analogous art, the rejection over Hetherington in view of Sydansk cannot be sustained. Clay, supra.

In Wang Laboratories, Inc., cited by both Appellant and the Examiner to support their respective positions, the court held that, even though a prior patent and the subject patents all relate to the same computer memories, they are not in the same field of endeavor, because the prior patent "involves memory circuits in which modules of varying sizes may be added or replaced; in contrast, the subject patents teach compact modular memories." Wang Laboratories, Inc., 993 F.2d at 864. The court further held that the prior

art was not reasonably pertinent because the subject patents deal with memories used in personal computers whereas the prior art deals with a memory circuit for a large, more costly industrial controllers. *Id.* at 864-865. The court concluded that the subject patents were non-analogous to the prior art patent. *Id.*

As in the court's discussion in Wang Laboratories, Inc., because the present invention and Nickolls are not in the same field of endeavor and Nickolls is not reasonably pertinent to the present invention, Nickolls is non-analogous to the present invention. Therefore it would not have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Nickolls to the identification of ingress noise.

In State Contracting & Eng'g Corp., in a jury trial before it, the district court had failed to make findings and enter conclusions as to the meanings of terms in claims, what art was relevant to the determination of obviousness, and related questions. In remanding the case to the district court for proceedings not inconsistent with its opinion, the Federal Circuit noted that

[w]hether a claim is invalid for obviousness is a legal conclusion that is based on underlying questions of fact. *Beckson Marine*, 292 F.3d at 725. The underlying factual inquiries include the scope and content of the prior art; the differences between the claimed invention and the prior art; the level of ordinary skill in the art; and objective evidence of nonobviousness, including commercial success, copying, and long-felt need. See *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 [148 USPQ 459](1966).

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A prerequisite to making a finding on the scope and content of the prior art is to determine what prior art references are pertinent. *In re Clay*, 966 F.2d 656, 658 [23 USPQ2d 1058](Fed. Cir. 1992). Whether a prior art reference is analogous is a question of fact. *Id.* A reference is analogous if it is from the same field of endeavor as the invention. *Id.* at 658-59. Similarity in the structure and function of the invention and the prior art is indicative that the prior art is within the inventor's field of endeavor. *In re Deminski*, 796 F.2d 436, 442 [230 USPQ 313] (Fed. Cir. 1986). If a reference is outside the inventor's field of endeavor, it is still analogous art if the reference "is reasonably pertinent to the particular problem with which the inventor is involved." *Clay*, 966 F.2d at 659.

\* \* \*

Upon review of the record, we conclude that there are factual questions as to the scope of the prior art references and the differences between the prior art and the claimed invention, as

well as whether there was a “motivation, teaching, suggestion, or reason” to combine the prior art references to derive the patented inventions. See *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1579 [42 USPQ2d 1378] (Fed. Cir. 1997).

In particular, there is a factual question as to the scope of the Kubota and Raymond references. A finder of fact could understand Kubota to disclose integrating a steel tube having reinforcing bars with a concrete pile by penetrating the steel tube and bars into concrete in an excavation pit before the concrete hardens. A finder of fact could understand Raymond, which discloses a concrete (page 1491) column with reinforcement, to teach the use of an auger in forming the ground situs, as provided in claim 2 of the '288 patent.

\* \* \*

To be sure, claim construction may narrow those factual issues. Because the trial court has not yet construed the critical limitations, we leave that task to the court on remand. The question whether there is a motivation to combine the pertinent elements of the prior art references in a manner that would read on the asserted claims depends, in turn, on the resolution of the factual questions and claim construction issues discussed above. If those issues are resolved in the contractors' favor, the evidence in the record, such as Mr. Tamaro's testimony that the decision to insert the columns before adding cementitious slurry was simply a scheduling decision, is sufficient to raise a factual question as to the presence of a motivation or suggestion to combine the elements of the prior art.

State Contracting & Eng'g Corp., at 1489-1491.

In Oetiker, cited by both Appellant and the Examiner to support their respective positions, the Court reversed the Board's reasoning and held that the Board erred in finding that “all hooking problems are analogous.” Id. at 1445 The Court noted that

[i]n order to rely on a reference as a basis for rejection of the applicant's invention, the reference must either be in the field of the applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. See In re Deminski, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986). Patent examination is necessarily conducted by hindsight, with complete knowledge of the applicant's invention, and the courts have recognized the subjective aspects of determining whether an inventor would reasonably be motivated to go to the field in which the examiner found the reference, in order to solve the problem confronting the inventor. We have reminded ourselves and the PTO that it is necessary to consider “the reality of the circumstances,” In re Wood, 599 F.2d 1032, 1036, 202 USPQ

171, 174 (CCPA 1979) - in other words, common sense - in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.

It has not been shown that a person of ordinary skill, seeking to solve a problem of fastening a hose clamp, would reasonably be expected or motivated to look to fasteners for garments. The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness.

\* \* \*

We conclude that the references on which the Board relied were improperly combined. Accordingly, the Board erred in holding the claims unpatentable under section 103. The rejection of claims 1-4 and 16-21 is REVERSED.

Oetiker at 1445-46. (emphasis added)

In spite of Oetiker's holding, however, the Examiner argues that Nickolls' invention is analogous to the present invention, "[b]ecause the two problems are mathematically analogous, it would have been obvious to one of ordinary skill in the art [of identifying the sources of ingress noise into a network], at the time of the invention, to apply the teachings of Nickolls et al. [for identifying signals from a distressed heart in order to determine what type of distress the heart is experiencing] to the identification of ingress noise." The June 16, 2006 rejection, page 3, lines 5-7. In doing so, the Examiner explicitly ignores the Federal Circuit's observation that "[i]t has not been shown that a person of ordinary skill, seeking to solve a problem of fastening a hose clamp [here insert "the problem of determining the source of ingress noise into a network"], would reasonably be expected or motivated to look to fasteners for garments [here insert "techniques for identifying what type of cardiac distress a person is experiencing"]. The combination of elements from non-analogous sources [Nickolls], in a manner that reconstructs [Appellant's] invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness." Nickolls is non-analogous. The combination of elements from non-analogous sources, in a manner that reconstructs Appellant's invention only with the benefit of hindsight, is insufficient to make a *prima facie* case of obviousness.

The difference between Nickolls and the present invention is more than just "whether or not the subject noise is generated externally (the instant invention) or internally (the reference invention)," as the Examiner, conducting the examination by hindsight, subjectively insists. Nothing in Nickolls discloses or suggests anything having anything to do

with noise at all. Indeed, Nickolls had better not be responding to noise, since to do so presumably would result in the wrong signal being applied to the heart of the patient being treated by the apparatus and method of Nickolls, jeopardizing the heart rhythm of the patient being treated by the apparatus and method of Nickolls.

The Examiner argues that “[t]he problem is essentially mathematical, and one of ordinary skill in the art would readily see that identifying noise is identifying noise whatever its source. Nickolls et al. is more than ‘reasonably pertinent’: it’s (*sic*) teaching is central to the problem at hand.” The June 16, 2006 rejection, page 3, lines 25-28. Again, nothing in Nickolls has anything to do with noise. Nickolls is not responding to noise. For Nickolls to respond to noise presumably would result in the wrong signal being applied to the heart of the patient being treated by the apparatus and method of Nickolls, with potentially fatal consequences.

The present invention provides a method and apparatus to monitor and identify the sources of ingress noise into a network. Ingress noise into a network can be from multiple different and unknown origins, external to the network. These sources include, but are by no means limited to, amateur radio, citizens’ band radio, machinery noise, home appliance noise, home computer clock signals, AM radio, and other electrical sources. The application as filed, page 1, line 25-page 2, line 2. A person of ordinary skill in the field of the present invention, such as in the field of community antenna television (CATV), seeking to solve a problem of monitoring and identifying the source of ingress noise into such networks, would not reasonably be expected or motivated to look to apparatus and methods for the identification and treatment of human heart arrhythmias.

“We have reminded ourselves and the PTO that it is necessary to consider ‘the reality of the circumstances’, In re Wood, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979)-in other words, common sense-in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.” In re Oetiker, *supra*. The Federal Circuit’s common sense approach precludes Nickolls from being reasonably pertinent or analogous to the present invention. Nickolls is non-analogous art to the invention of the present claims. Therefore it would not have been 35 U. S. C. § 103 obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Nickolls to the identification of ingress noise.

**II. Even assuming Nickolls were not non-analogous to the present invention, claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 would still be patentable over Nickolls**

Beyond being non-analogous, nowhere does Nickolls disclose or suggest claim 1's specifically recited

*“identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress”*

(italics Appellant's). The italicized elements of claim 1 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious reading of Nickolls. Claim 1 is allowable at least on this basis.

Claim 2 depends from claim 1 and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests that

*comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 2 (italics Appellant's). Claim 2 is allowable on this basis as well.

Claim 3 depends from claim 2, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 3 (italics Appellant's). Claim 3 is allowable on this basis as well.

Claim 4 depends from claim 3, which depends from claim 2, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the*

*frequency spectra of known sources of ingress*

as specifically recited in claim 4 (italics Appellant's). Claim 4 is allowable on this basis as well.

Claim 6 depends from claim 1 and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests *digitizing the frequency spectrum of the ingress*, as specifically recited in claim 6 (italics Appellant's). Claim 6 is allowable on this basis as well.

Claim 7 depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*comparing the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the thus-digitized frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 7 (italics Appellant's). Claim 7 is allowable on this basis as well.

Claim 8 depends from claim 7, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 8 (italics Appellant's). Claim 8 is allowable on this basis as well.

Claim 9 depends from claim 8, which depends from claim 7, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*



as specifically recited in claim 9 (italics Appellant's). Claim 9 is allowable on this basis as well.

Claim 11 depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress*

as specifically recited in claim 11 (italics Appellant's). Claim 11 is allowable on this basis as well.

Claim 12 depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*comparing the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which of the thus-digitized frequency spectra of known sources of ingress is closest to the thus-digitized frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 12 (italics Appellant's). Claim 12 is allowable on this basis as well.

Claim 13 depends from claim 12, which depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 13 (italics Appellant's). Claim 13 is allowable on this basis as well.

Claim 14 depends from claim 13, which depends from claim 12, which depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

*includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 14 (italics Appellant's). Claim 14 is allowable on this basis as well.

Claim 16 depends from claim 1 and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests that

*comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress*

as specifically recited in claim 16 (italics Appellant's). Claim 16 is allowable on this basis as well.

Claim 17 depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*comparing the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which thus-digitized frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 17 (italics Appellant's). Claim 17 is allowable on this basis as well.

Claim 18 depends from claim 17, which depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 18 (italics Appellant's). Claim 18 is allowable on this basis as well.

Claim 19 depends from claim 18, which depends from claim 17, which depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of*

*the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includes using a back propagation neural network to find an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 19(italics Appellant's). Claim 19 is allowable on this basis as well.

Nowhere does Nickolls disclose or suggest claim 21's specifically recited memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress (italics Appellant's).

Claim 22 depends from claim 21 and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests that

the device includes a device for finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 22 (italics Appellant's). Claim 22 is allowable on this basis as well.

Claim 23 depends from claim 22, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device includes a neural network, *the device teaching the neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 23 (italics Appellant's). Claim 23 is allowable on this basis as well.

Claim 24 depends from claim 23, which depends from claim 22, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device includes a back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 24 (italics Appellant's). Claim 24 is allowable on this basis as well.

Claim 26 depends from claim 21 and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests that *the device includes a device for digitizing the frequency spectrum of the ingress*, as specifically recited in claim 26 (italics Appellant's). Claim 26 is allowable on this basis as well.

Claim 27 depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that the device includes a device for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 27 (italics Appellant's). Claim 27 is allowable on this basis as well.

Claim 28 depends from claim 27, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device includes a neural network, *the device teaching the neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 28 (italics Appellant's). Claim 28 is allowable on this basis as well.

Claim 29 depends from claim 28, which depends from claim 27, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device includes a back propagation neural network for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 29 (italics Appellant's). Claim 29 is allowable on this basis as well.

Claim 31 depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 31 (italics Appellant's). Claim 31 is allowable on this basis as well.

Claim 32 depends from claim 31, which depends from claim 26, which

depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device includes a device for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 32 (italics Appellant's). Claim 32 is allowable on this basis as well.

Claim 33 depends from claim 32, which depends from claim 31, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device includes a neural network, *the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 33 (italics Appellant's). Claim 33 is allowable on this basis as well.

Claim 34 depends from claim 33, which depends from claim 32, which depends from claim 31, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device further includes a back propagation neural network for finding an optimum solution to the *problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 34 (italics Appellant's). Claim 34 is allowable on this basis as well.

Claim 36 depends from claim 21, and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests that

*the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 36 (italics Appellant's). Claim 36 is allowable on this basis as well.

Claim 37 depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device includes a device for finding an optimum solution to the problem of *comparison of the stored frequency spectrum of the ingress to the thus-digitized frequency spectra of known*

*sources of ingress*

as specifically recited in claim 37 (italics Appellant's). Claim 37 is allowable on this basis as well.

Claim 38 depends from claim 37, which depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device includes a neural network, *the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 38 (italics Appellant's). Claim 38 is allowable on this basis as well.

Claim 39 depends from claim 38, which depends from claim 37, which depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests a

back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 39 (italics Appellant's). Claim 39 is allowable on this basis as well.

### **III. The 35 U. S. C § 103 rejections based upon the combination of Nickolls and Eberhart**

The Examiner rejected claims 5, 10, 15, 20, 25, 30, 35 and 40 under 35 U. S. C. § 103. The Examiner relied upon the combination of Nickolls and Eberhart to support this rejection. The Examiner concedes that Nickolls does not teach a particle swarm optimizer (hereinafter sometimes PSO). The Examiner calls Appellant's attention specifically to Eberhart's col. 1, line 64 to col. 2, line 7. The Examiner indicates that Eberhart teaches that a "PSO can improve the efficiency of diagnostic neural networks." The June 16, 2006 rejection, page 4, lines 7-8. The Examiner concludes that "it would have been obvious to one of the ordinary skills in the art, at the time of the invention, to add the teachings of Eberhart et al. to those of Nickolls et al." The June 16, 2006 rejection, page 4, lines 9-10.

**Determining the nature of cardiac distress by analyzing signals generated in the distressed heart is non-analogous to determining a source of ingress noise entering into a network.**

First, Nickolls is non-analogous, and thus incapable of being relied upon to reject Appellant's claims under 35 U. S. C. § 103. Appellant's non-analogous art argument set forth in section I of these arguments concerning Nickolls is incorporated here by reference.

**But further, there is neither motivation nor any expectation of success to combine Nickolls and Eberhart to solve the specific problem to which the present invention is addressed.**

The PTO has the burden under section 103 to establish a *prima facie* case of obviousness (citing In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984)). Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1138, 227 USPQ 543, 548 (Fed. Cir. 1985).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). That knowledge cannot come from the applicant's invention itself. In re Oetiker, 977 F.2d at 1447, citing Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 678-79, 7 USPQ2d 1315, 1318 (Fed. Cir. 1988); In re Geiger, 815 F.2d 686, 687, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987); Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1147, 227 USPQ 543, 551 (Fed. Cir. 1985).

Second, there must be a reasonable expectation of success.

Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Appellant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

[V]irtually all [inventions] are combinations of old elements. Environmental Designs, Ltd. v. Union Oil Co., 713 F.2d 693, 698, 218 U.S.P.Q. 865, 870 (Fed. Cir. 1983); *see also* Richdel, Inc. v. Sunspool Corp., 714 F.2d 1573, 1579-80, 219 U.S.P.Q. 8, 12 (Fed. Cir. 1983) ("Most, if not all, inventions are combinations and mostly of old elements."). An examiner may often find every element of a claimed invention in the prior art.

If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be “an illogical and inappropriate process by which to determine patentability.”

In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998), citing Sensonics, Inc. v. Aerosonic Corp., 81 F.3d 1566, 1570, 38 USPQ.2d 1551, 1554 (Fed. Cir. 1996).

The Federal Circuit has identified three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. In re Rouffet, 149 F.3d at 1357. The factual inquiry whether to combine references must be thorough and searching. In re Lee, 61 USPQ.2d at 1533. Particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). The examiner must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. In re Rouffet, 149 F.3d at 1359, 47 USPQ2d at 1459.

It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to “[use] that which the inventor taught against its teacher.” W. L. Gore v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983). Thus the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency’s conclusion.

In re Lee, 61 USPQ2d at 1435.

The Examiner conceded that Nickolls does not teach a particle swarm optimizer. The June 16, 2006 rejection, page 4, lines 5-6. The Examiner links Nickolls and Eberhart by the following general statement in Eberhart’s background: “[a]rtificial neural networks and evolutionary computational techniques are effective in solving certain classes of problems. For example, artificial neural networks are good at mapping input patterns to output patterns in such applications as diagnostic systems.” Eberhart, col. 1, lines 62-66. The Eberhart statement upon which the Examiner relies provides no motivation to combine Nickolls and Eberhart to solve the problem to which the present invention is addressed.



Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 5's specifically recited

*method of identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress, comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress together includ[ing] finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress, finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includ[ing] teaching a neural network the frequency spectra of known sources of ingress, finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includ[ing] using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress, teaching a neural network the frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress together includ[ing] using a particle swarm optimizer to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 5 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 5 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 10's specifically recited

*method of identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, digitizing the frequency spectrum of the ingress, comparing the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the thus-digitized frequency spectrum of the ingress together includ[ing] finding*

an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*, finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress* includ[ing] teaching a neural network *the frequency spectra of known sources of ingress*, finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress* includ[ing] using a back propagation neural network to find an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*, teaching a neural network *the frequency spectra of known sources of ingress* and using a back propagation neural network to find an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress* together includ[ing] using a particle swarm optimizer to find an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 10 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 10 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 15's specifically recited

method of *identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, digitizing the frequency spectrum of the ingress, comparing the digitized frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress, comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includ[ing] digitizing the frequency spectra of known sources of ingress, comparing the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which of the thus-digitized frequency spectra of known sources of ingress is closest to the thus-digitized frequency spectrum of the ingress together includ[ing] finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress, finding an optimum solution to the problem of comparison of the thus-digitized frequency*

*spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includ[ing] teaching a neural network the thus-digitized frequency spectra of known sources of ingress, finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includ[ing] using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress, teaching a neural network the thus-digitized frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress together includ[ing] using a particle swarm optimizer to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 15 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 15 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 20's specifically recited

*method of identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress, comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress include[ing] digitizing the frequency spectra of known sources of ingress, comparing the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which thus-digitized frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress together includ[ing] finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress, finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includ[ing] teaching a neural network the thus-digitized frequency spectra of known sources of ingress, finding an optimum solution to the*

problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includ[ing] using a back propagation neural network to find an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*, teaching a neural network *the thus-digitized frequency spectra of known sources of ingress* and using a back propagation neural network to find an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress together* includ[ing] using a particle swarm optimizer to find an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 20 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 20 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 25's specifically recited

[a]pparatus for *identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress*, the device [ ] for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*, the device includ[ing] a neural network, the device teaching the neural network *the frequency spectra of known sources of ingress*, the device includ[ing] a back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*, the neural network and back propagation neural network together including a particle swarm optimizer for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 25 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 25 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 30's specifically recited

*[a]pparatus for identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress, the device [ ] for digitizing the frequency spectrum of the ingress, the device [ ] for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress, the device includ[ing] a neural network, the device teaching the neural network the frequency spectra of known sources of ingress, the device includ[ing] a back propagation neural network for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress, the neural network and back propagation neural network together includ[ing] a particle swarm optimizer for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 30 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 30 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 35's specifically recited

*[a]pparatus for identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress, the device [ ] for digitizing the frequency spectrum of the ingress, the device [ ] for digitizing the frequency spectra of known sources of ingress[,] the memory includ[ing] a memory for storing the thus-digitized frequency spectra of known sources of ingress, the device [ ] for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress, the device includ[ing] a neural network, the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress, the device further includ[ing] a back propagation neural network for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized*

*frequency spectra of known sources of ingress, the neural network and back propagation neural network together includ[ing] a particle swarm optimizer for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 35 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 35 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 40's specifically recited

*[a]pparatus for identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress, the device [ ] for digitizing the frequency spectra of known sources of ingress[,] the memory [ ] for storing the thus-digitized frequency spectra of known sources of ingress, the device [ ] for finding an optimum solution to the problem of comparison of the stored frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress, the device includ[ing] a neural network, the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress, a back propagation neural network for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress, the neural network and the back propagation neural network together includ[ing] a particle swarm optimizer for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 40 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 40 is allowable at least on this basis.

The Examiner did not explain any reason why a skilled artisan, without knowledge of the present invention, would have linked Nickolls and Eberhart as the focus of the 35 U. S. C. § 103 obviousness inquiry, or combined the two in the manner the Examiner has to solve the problem to which the present invention is addressed. The only source linking Nickolls and Eberhart to the present invention is the present application. It is reasonable to

infer that the Examiner selected these references with the assistance of hindsight based on Appellant's claims. Courts forbid the use of this kind of hindsight reconstruction in the selection of references to establish 35 U. S. C. § 103 obviousness. In re Rouffet, 149 F.3d at 1358. See In re Gorman, 933 F.2d 982, 986, 18 U.S.P.Q.2d 1885, 1888 (Fed. Cir. 1991). Lacking a motivation to combine references, the Examiner did not establish a *prima facie* case of obviousness.

Without establishing any motivation to combine the references to solve the problem to which the present invention is addressed, the Examiner has not made a *prima facie* case of 35 U. S. C. § 103 obviousness.

The nature of the problem that the present invention attempted to solve relates to the identification of unknown external sources of ingress noise into networks. The teachings of Nickolls relate to identifying from signals generated by the heart itself the nature of the distress being experienced by the heart of a person in cardiac distress. The teachings of Eberhart relate to generalized methods and apparatus for evolving neural networks. The Examiner has combined Nickolls, which teaches a neural network for identifying electrical signals from a cardiac event with one of several stored sets of cardiac event electrical signatures, with Eberhart, which teaches a generalized neural network which employs a particle swarm optimizer. The nature of the problem that Nickolls attempted to solve is non-analogous and not pertinent to the present invention, and the above discussions concerning the non-analogous nature of Nickolls are incorporated here by reference. Neither Nickolls nor Eberhart discloses or suggests any motivation to combine their teachings to solve the problem to which the present invention is addressed.

Accordingly, Applicant submits that the 35 U. S. C. § 103 rejection of dependent claims 5, 10, 15, 20, 25, 30, 35, and 40 based upon Nickolls and Eberhart is erroneous and should be reversed. Such action is respectfully requested.

#### **IV. Nickolls does not anticipate the present invention**

The Examiner rejected claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 under 35 U. S. C. § 102. The Examiner relied upon Nickolls to support this rejection.

As noted above in the discussion of the 35 U. S. C. § 103 rejection of claims based upon Nickolls, nowhere does Nickolls disclose or suggest claim 1's specifically recited

“identifying *a source of ingress into a network* including storing *frequency spectra of known sources of ingress*, comparing the *frequency spectrum of ingress to the frequency spectra of known sources of ingress*, and determining from the

*comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress”*

(italics Appellant’s). The italicized elements of claim 1 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious reading of Nickolls. Claim 1 is allowable at least on this basis.

Claim 2 depends from claim 1 and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests that

*comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 2 (italics Appellant’s). Claim 2 is allowable on this basis as well.

Claim 3 depends from claim 2, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 3 (italics Appellant’s). Claim 3 is allowable on this basis as well.

Claim 4 depends from claim 3, which depends from claim 2, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 4 (italics Appellant’s). Claim 4 is allowable on this basis as well.

Claim 6 depends from claim 1 and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests *digitizing the frequency spectrum of the ingress*, as specifically recited in claim 6 (italics Appellant’s). Claim 6 is allowable on this basis as well.



Claim 7 depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*comparing the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the thus-digitized frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 7 (italics Appellant's). Claim 7 is allowable on this basis as well.

Claim 8 depends from claim 7, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 8 (italics Appellant's). Claim 8 is allowable on this basis as well.

Claim 9 depends from claim 8, which depends from claim 7, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 9 (italics Appellant's). Claim 9 is allowable on this basis as well.

Claim 11 depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress*

as specifically recited in claim 11 (italics Appellant's). Claim 11 is allowable on this basis as

well.

Claim 12 depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*comparing the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which of the thus-digitized frequency spectra of known sources of ingress is closest to the thus-digitized frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 12 (italics Appellant's). Claim 12 is allowable on this basis as well.

Claim 13 depends from claim 12, which depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 13 (italics Appellant's). Claim 13 is allowable on this basis as well.

Claim 14 depends from claim 13, which depends from claim 12, which depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 14 (italics Appellant's). Claim 14 is allowable on this basis as well.

Claim 16 depends from claim 1 and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*comparing the frequency spectrum of the ingress to the*

*frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress*

as specifically recited in claim 16 (italics Appellant's). Claim 16 is allowable on this basis as well.

Claim 17 depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*comparing the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which thus-digitized frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 17 (italics Appellant's). Claim 17 is allowable on this basis as well.

Claim 18 depends from claim 17, which depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 18 (italics Appellant's). Claim 18 is allowable on this basis as well.

Claim 19 depends from claim 18, which depends from claim 17, which depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 19 (italics Appellant's). Claim 19 is allowable on this basis as well.

Nowhere does Nickolls disclose or suggest claim 21's specifically recited memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress (*italics Appellant's*).

Claim 22 depends from claim 21 and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests that

the device includes a device for finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 22 (*italics Appellant's*). Claim 22 is allowable on this basis as well.

Claim 23 depends from claim 22, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device includes a neural network, *the device teaching the neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 23 (*italics Appellant's*). Claim 23 is allowable on this basis as well.

Claim 24 depends from claim 23, which depends from claim 22, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device includes a back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 24 (*italics Appellant's*). Claim 24 is allowable on this basis as well.

Claim 26 depends from claim 21 and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests that *the device includes a device for digitizing the frequency spectrum of the ingress*, as specifically recited in claim 26 (*italics Appellant's*). Claim 26 is allowable on this basis as well.

Claim 27 depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

the device includes a device for finding an optimum solution to the problem of *comparison of the thus-digitized frequency*

*spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 27 (italics Appellant's). Claim 27 is allowable on this basis as well.

Claim 28 depends from claim 27, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*the device includes a neural network, the device teaching the neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 28 (italics Appellant's). Claim 28 is allowable on this basis as well.

Claim 29 depends from claim 28, which depends from claim 27, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*the device includes a back propagation neural network for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 29 (italics Appellant's). Claim 29 is allowable on this basis as well.

Claim 31 depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 31 (italics Appellant's). Claim 31 is allowable on this basis as well.

Claim 32 depends from claim 31, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*the device includes a device for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 32 (italics Appellant's). Claim 32 is allowable on this basis as well.

Claim 33 depends from claim 32, which depends from claim 31, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*the device includes a neural network, the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 33 (italics Appellant's). Claim 33 is allowable on this basis as well.

Claim 34 depends from claim 33, which depends from claim 32, which depends from claim 31, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*the device further includes a back propagation neural network for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 34 (italics Appellant's). Claim 34 is allowable on this basis as well.

Claim 36 depends from claim 21, and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests that

*the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 36 (italics Appellant's). Claim 36 is allowable on this basis as well.

Claim 37 depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*the device includes a device for finding an optimum solution to the problem of comparison of the stored frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 37 (italics Appellant's). Claim 37 is allowable on this basis as well.

Claim 38 depends from claim 37, which depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

*the device includes a neural network, the device teaching the neural network the thus-digitized frequency spectra of known*

*sources of ingress*

as specifically recited in claim 38 (italics Appellant's). Claim 38 is allowable on this basis as well.

Claim 39 depends from claim 38, which depends from claim 37, which depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests a

back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 39 (italics Appellant's). Claim 39 is allowable on this basis as well.

Because claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34, and 36-39 distinguish patentably from Nickolls, the 35 U. S. C. § 102 rejection of claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34, and 36-39 is erroneous. Applicant respectfully requests that such rejection be reversed.

## **V. Summary Conclusions**

Nickolls device for examining heart-generated signals, and comparing those signals to known heart distress signals to identify which kind of distress the heart being monitored is experiencing is non-analogous art to the present invention's identification of the ingress noise from external and unknown sources into networks. No 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart discloses or suggests the specifically recited combinations of elements contained in Appellant's claims. Nickolls does not anticipate the specifically recited combinations of elements contained in Appellant's claims. The rejections of Appellant's claims are erroneous and should be reversed. Such action is respectfully requested.

Respectfully submitted,



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INDS02 RDC 821524

## Claims Appendix

The claims on appeal follow:

1. A method of identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress.
2. The method of claim 1 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.
3. The method of claim 2 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress.
4. The method of claim 3 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.
5. The method of claim 4 wherein teaching a neural network the frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.
6. The method of claim 1 further including digitizing the frequency spectrum of the ingress.
7. The method of claim 6 wherein comparing the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the



thus-digitized frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

8. The method of claim 7 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress.

9. The method of claim 8 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

10. The method of claim 9 wherein teaching a neural network the frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

11. The method of claim 6 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress.

12. The method of claim 11 wherein comparing the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which of the thus-digitized frequency spectra of known sources of ingress is closest to the thus-digitized frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

13. The method of claim 12 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress.

14. The method of claim 13 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

15. The method of claim 14 wherein teaching a neural network the thus-digitized frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

16. The method of claim 1 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress.

17. The method of claim 16 wherein comparing the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which thus-digitized frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

18. The method of claim 17 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress.

19. The method of claim 18 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

20. The method of claim 19 wherein teaching a neural network the thus-digitized frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum

of the ingress to the thus-digitized frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

21. Apparatus for identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress.

22. The apparatus of claim 21 wherein the device includes a device for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

23. The apparatus of claim 22 wherein the device includes a neural network, the device teaching the neural network the frequency spectra of known sources of ingress.

24. The apparatus of claim 23 wherein the device includes a back propagation neural network for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

25. The apparatus of claim 24 wherein the device further includes a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress, the neural network and back propagation neural network together including a particle swarm optimizer for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

26. The apparatus of claim 21 wherein the device includes a device for digitizing the frequency spectrum of the ingress.

27. The apparatus of claim 26 wherein the device includes a device for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

28. The apparatus of claim 27 wherein the device includes a neural network, the device teaching the neural network the frequency spectra of known sources of ingress.

29. The apparatus of claim 28 wherein the device includes a back propagation neural network for finding an optimum solution to the problem of comparison of

the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

30. The apparatus of claim 29 wherein the neural network and back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

31. The apparatus of claim 26 wherein the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress.

32. The apparatus of claim 31 wherein the device includes a device for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

33. The apparatus of claim 32 wherein the device includes a neural network, the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress.

34. The apparatus of claim 33 wherein the device further includes a back propagation neural network for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

35. The apparatus of claim 34 wherein the neural network and back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

36. The apparatus of claim 21 wherein the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress.

37. The apparatus of claim 36 wherein the device includes a device for finding an optimum solution to the problem of comparison of the stored frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

38. The apparatus of claim 37 wherein the device includes a neural network, the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress.

39. The apparatus of claim 38 further including a back propagation neural network for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

40. The apparatus of claim 39 wherein the neural network and the back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

## Evidence Appendix

No evidence has been submitted in this case pursuant to 37 C. F. R. §§ 1.130-

1.132.

### Related Proceedings Appendix

There are no copies of decisions rendered by a court or the Board in any proceedings identified pursuant to 37 C. F. R. § 41.37(c)(1)(ii).